

# The Northern and Southern Lights

The northern and southern lights are commonly referred to as **auroras**. They manifest as beautiful, multicolored, shifting patterns of lights in the sky. We will examine the differences between northern and southern auroras and how they form.

## Northern and Southern Auroras



Aurora Borealis can be seen in Alaska.

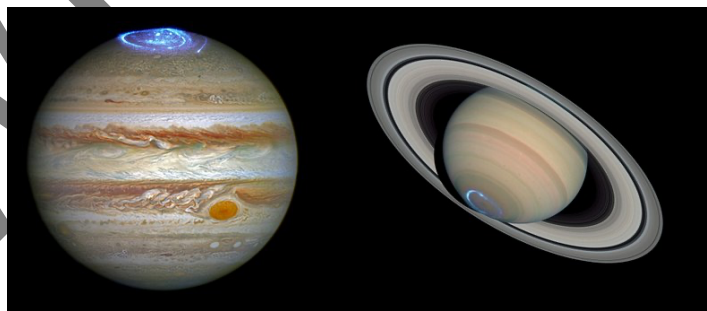
seen near the poles, Aurora Borealis can be seen as far south as Alaska, Canada, Scotland, Denmark, Finland, Greenland, Iceland, Norway, Sweden, and Russia.

Aurora Australis is usually **more difficult** to see than Aurora Borealis. Southern lights are seen mostly in **Antarctica**, but sometimes can be observed as far north as **New Zealand**.



Aurora Australis is harder to see than Aurora Borealis.

Auroras are also seen on other planets. Scientists at NASA have photographed them on both Jupiter and Saturn.



Auroras can be seen on both Jupiter (l) and Saturn (r).

## Formation of Auroras

Technically, there are no differences between northern and southern lights, aside from geographical location and visibility. They form the same way. Auroras are powered by great amounts of energy built up by **solar wind**. Solar wind is the product of **plasma** (a field of charged particles from the Sun that surrounds the Earth) and currents created by the Sun's magnetic field.

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These elemental collisions also explain why there are auroras on other planets. When atoms or molecules in their own atmospheres become charged, they similarly display colors. We can tell what elements or molecules are in the atmosphere based on the colors of the aurora.

When there are strong solar winds and the magnetosphere becomes squished, opening the polar holes wider, auroras can be seen much farther south (Borealis) and north (Australis) than normal. This is because charged particles can access the ionosphere at more southerly and northerly locales.

### Reading Comprehension Questions

1. What are the formal names for the northern and southern lights?
2. What are
3. Where are auroras typically seen?
4. On
5. Define
6. What is a photon?

### Extension Questions

7. Choose three different elements (not oxygen or nitrogen) and investigate what colors they give off when charged.
8. Find two
9. Why

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